

U.S. Patent Application Serial No. 10/030,095
Amendment filed September 24, 2004
Reply to OA dated June 24, 2004

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-3 (canceled):

Claim 4 (previously presented): The multi-layer resin tube according to any one of claims 13 or 15, said body layer comprises a polyamide.

Claim 5 (previously presented): The multi-layer resin tube according to claim 13, said barrier component is a fluorine resin, and said adhesive component is a modified fluorine resin.

Claim 6 (previously presented): The multi-layer resin tube according to any one of claims 13 or 15, said barrier component is an ethylene-tetrafluoroethylene copolymer and said adhesive component is a modified ethylene-tetrafluoroethylene copolymer.

Claim 7 (previously presented): The multi-layer resin tube according to any one of claims 13 or 15, said barrier component is an ethylene-tetrafluoroethylene copolymer blended with a conductive filler.

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Claim 8 (previously presented): The multi-layer resin tube according to claim 7, said conductive filler is carbon black.

Claims 9 and 10 (canceled):

Claim 11 (previously presented): The multi-layer resin tube according to any one of claims 13 to 15, said outermost gradient layer comprises said barrier component at a concentration of 0.1 to 30 % by weight, and said innermost gradient layer comprises said adhesive component at a concentration of 0.1 to 30 % by weight.

Claim 12 (previously presented): The multi-layer resin tube according to claim 11, said outermost fractional layer comprises said barrier component at a concentration of 1 to 10 % by weight, and said innermost fractional layer comprises said adhesive component at a concentration of 0.5 to 3 % by weight.

Claim 13 (Currently amended): A multi-layer resin tube for use as a fuel tube for automobiles, the multi-layer resin tube comprising:

a body layer comprising a thermoplastic resin; and

a barrier layer provided on an inner surface of said body layer, said barrier layer comprising

a plurality of gradient layers, each of said gradient layers comprising an adhesive component and a barrier component for controlling fuel permeability, said plurality of gradient layers comprising:

an outermost gradient layer provided on said inner surface of said body layer;

an innermost gradient layer which defines an inside surface of said multi-layer resin tube, and

optionally, one or more intermediate gradient layers provided between said outermost layer and said innermost layer,

wherein, said adhesive component is present in said plurality of gradient layers at a concentration that decreases in each sequential gradient layer from said outermost gradient layer having a highest concentration, to said innermost gradient layer having a lowest concentration of adhesive component, and

said barrier component is present in said plurality of gradient layers at a concentration that increases in each sequential gradient layer from said outermost gradient layer having a lowest concentration, to said innermost gradient layer having a highest concentration of barrier component, and

wherein said barrier layer does not comprise nylon.

Claim 14 (canceled):

Claim 15 (Currently amended): A multi-layer resin tube for use as a fuel tube for automobiles, the multi-layer resin tube comprising:

a body layer comprising a thermoplastic resin; and

a barrier layer provided on an inner surface of said body layer, said barrier layer consisting of a plurality of gradient layers, each gradient layer consisting of ~~a modified fluorine resin~~ an adhesive component, and a ~~fluorine resin~~ barrier component, said adhesive component consisting of one or more modified fluorine resins, and said barrier component consisting of one or more fluorine resins and optionally one or more conductive fillers ~~containing a conductive filler~~, said plurality of gradient layers comprising:

an outermost gradient layer provided on said inner surface of said body layer;

an innermost gradient layer which defines an inside surface of said multi-layer resin tube, and

optionally, one or more intermediate gradient layers provided between said outermost layer and said innermost layer,

wherein, said adhesive component is present in said plurality of gradient layers at a concentration that decreases in each sequential gradient layer from said outermost gradient layer having a highest concentration, to said innermost gradient layer having a lowest concentration of adhesive component, and

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said barrier component is present in said plurality of gradient layers at a concentration that increases in each sequential gradient layer from said outermost gradient layer having a lowest concentration, to said innermost gradient layer having a highest concentration of barrier component.